

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. :10/553,194
Applicants :Werner Ehrmann
Filed :October 13, 2005
TC/A.U. :1794
Examiner :William P. Watkins III
Docket No. :2923-733
Customer No. :6449
Confirmation No. :1264

DECLARATION UNDER 37 CFR §1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, Dr. Steffen Schneider, declare as follows:

1. I graduated from 1986 to 1992 at the Technical University of Dresden and finished with a Diploma in Chemistry. From 1992 to 1997 I did my PhD in Chemistry (topic: "Calorimetric and chromatographic surface analysis to explain the Lewis Acid Base Character of modified polyethylene and model polymers") at Technical University of Dresden.

2. I work in the development department of the label producing company Zweckform GmbH, later Steinbeis Battery Label GmbH, today CCL Label GmbH since 1998. I gained experience in the field of label development and label production for over 10 years. I worked in development projects to improve label components like films,

inks, lacquers, adhesives and to improve the product performance of labels in the market.

3. I am familiar with the subject matter described and claimed in the United States Patent Application Serial No. 10/553,194, filed on October 13, 2005, entitled "Sticker comprising a metallization layer protected against corrosion."

4. I am familiar with the references cited in the Office Action mailed November 12, 2009.

5. That the claims of United States Patent Application Serial No. 10/553,194 are drawn to a method for producing a label in the form of a layer composite, the method comprising covering a plastic film layer with a metallization layer having flat sides, wherein the entire area of said film layer serves as a substrate of said metallization layer defining a peripheral edge of the label to be produced from said layer composite and producing a gap extending at least through said metallization layer and along a margin of said peripheral edge, flatly covering said metallization layer with a transparent covering layer such that said metallization layer is arranged between said film layer and said covering layer, wherein said covering layer is flatly adhered to said metallization layer using a laminating layer which extends into said gap to form a sealing strip which fills the gap, and said metallization layer is completely covered on both of its flat sides, and wherein the label is cut from said layer composite.

contours to the plastic film layer. To provide for a sealable edge of the metallization layer within the margin or the contour of the label, a gap is machined into the metallization layer along the margin. Removing the metallization layer changes, in particular roughens the surface of the plastic film layer carrying the metallization layer at the bottom of the gap. It is the bottom of the gap which has to provide adherence to the laminating layer fixing a covering film layer to the layer sub-composite for finishing the protective sandwich structure. Of course, the plastic film layer of the pre-fabricated layer sub-composite can be provided on its side opposite the metallization layer with a pressure-sensitive adhesive layer, and the metallization layer or the covering film layer can be decorated by imprinting as it is usual with the production of labels. In a final step the label is cut from the finished layer composite.

To my knowledge, it is new in the field of label production to remove a defined portion of a metallization layer supported on a plastic film layer at a surface portion which is intended to be sealingly laminated to another film layer despite the fact that machining a gap into the metallization layer will deteriorate the surface of the plastic film layer. In my opinion it was surprising that the machined surface of the plastic film layer was durably sealed to the covering layer.

Metallized prior art labels such as the sleeve jacket described in the US patent 4,608,323 to Zaborney have imprinted metallic ink in a defined area of a plastic film layer such that a frame free of metallic ink surrounds the decoration. The frame shows the original surface of the plastic film layer and is laminated to the original surface of a

6. It is my expert opinion that the method for producing a label as described in the United States patent application serial number 10/553,194 is unique in view of prior art methods of preventing corrosion on a metallization layer sandwiched between two film layers flatly covering the metallization layer. It was surprising that the metallization layer could be durably sealed in between the film layers even after having machined one of the film layers to provide for a sealing surface area.

It is desirable to provide labels having a lustrous metallic appearance to enhance the acceptance of a product. This is especially true for batteries and particular alkaline-type cells. Historically, alkaline cells had decorated metal jackets, and customers are used to such an appearance of high-quality cells. To provide for the metallic appearance, the decoration of the labels was imprinted using metallic pigmented inks or by using non-metallic transparent inks imprinted on a metallization layer or on a transparent film layer covering the metallization layer. The problem encountered with such labels is that the metallized ink or the metallization layer is highly susceptible to corrosion of environmental substances such as corrosive electrolytes, for example such as alkaline KOH present in alkaline cells.

According to the invention, the labels produced from a pre-fabricated layer-sub-composite comprising a plastic film layer flatly covered with a metallization layer deposited for example by means of a physical vapor deposition process on the entire surface of the plastic film layer. Using a pre-fabricated composite for mass production of labels is much cheaper than specifically applying metallization fields with the label

cover film layer. As shown in the Zaborney patent, for example in Fig. 4, the frame 33a which is completely transparent in contrast to the rest of the jacket is relatively wide which may disturb the appearance of the article carrying the label. In contrast thereto, it was surprising for me that according to the invention the gap machined into the metallization layer could be made very small without undesirably deteriorating the sealing properties protecting the metallization layer against corrosion.

To prove the corrosion resistance, we prepared test labels with the following structure:

1. a transparent PVC cover foil, 15 μm thick
2. a transparent PUR laminating adhesive layer, 1 to 3 μm thick
3. a decoration layer of PVC/acrylate inks, 2 to 5 μm thick
4. an acrylate-primer layer, 2 μm thick
5. a metallization layer of vapor deposited aluminium, 20 to 50 nm thick
6. a transparent PVC foil forming a carrier layer for the metallization layer,
35 μm thick
7. an acrylate pressure-sensitive adhesive layer, 18 to 22 μm thick.

The labels cut from the above layer composite material has a rectangular shape with a sealed gap machined into the metallization layer along only one of the four peripheral edges of the label. The gap was machined into the metallization layer by means of a laser. A pressurized air jet was used to remove detached particles. The labels have been applied to absorbent paper soaked with 30 % KOH for a time period of

six hours. Thereafter, the corrosion of unsealed, i.e. unprotected peripheral edges of each label was compared with the condition of the peripheral edge protected by the sealed gap as a reference. Tests with different dimensions of the gap have been made:

In one of the tests the gap had a width of 920 μm with the gap extending to the peripheral edge (enclosure 1) .

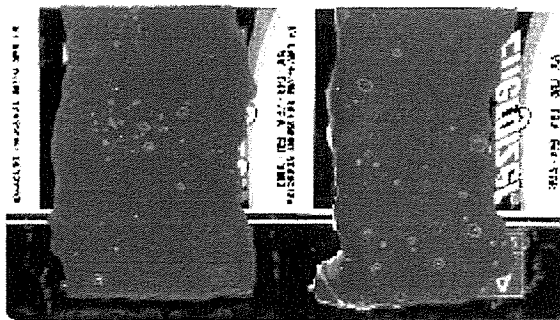
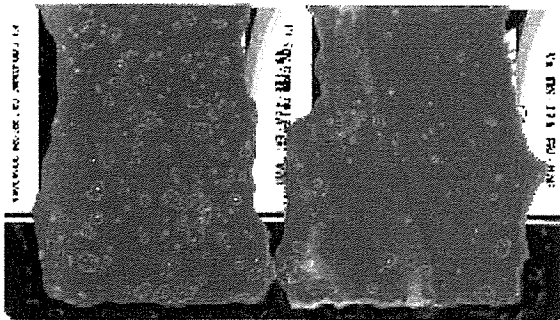
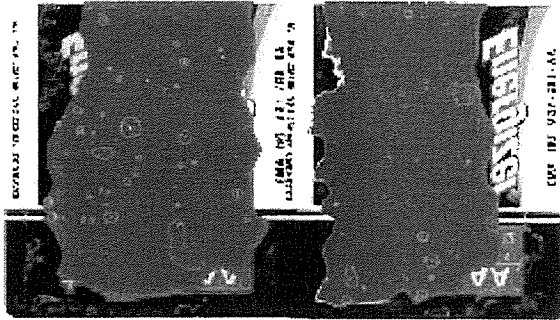
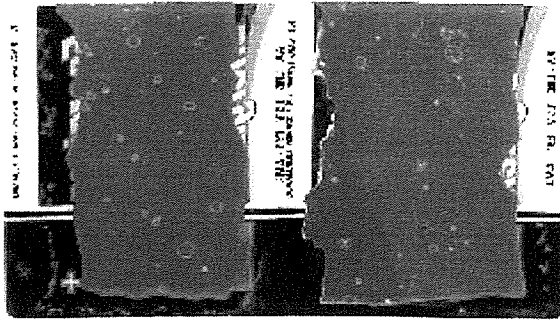
As enclosure 2 we enclose a sample of the label used in the test; the protected edge is marked by an arrow on the unprinted side of the metallization layer. The protected peripheral edge was not corroded while the unprotected peripheral edges had been corroded to a depth between 2 and 12 mm. The form of the gap corresponds to the embodiment of Fig. 3 of US patent application USSN 10/553,194.

The tests have shown that a sealing gap of at least 0,5 mm in general is sufficient to protect a label against corrosion and an optimum may be found between a small gap not disturbing the appearance of the label and a gap somewhat broader but safely protecting the label against corrosion.

7. The undersigned further declares that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false

statements may jeopardize the validity of the application or any patent issuing thereon.

Signature	<u>Schneider Steffen</u>
Name	<u>Dr. Steffen Schneider</u>
Date	<u>07.05. 2010</u>



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